

Botanical Diversity (BIOL 110), Spring 2002
SYLLABUS

Instructors: David Hibbett, dhibbett@black.clarku.edu Sackler N300A. Office hours: Tuesday 1:00-2:00, or by appointment.

TA: Zheng Wang (TA), zwang@clarku.edu Sackler N310.

Text: *Biology of Plants, Sixth Edition*, Raven, Evert, and Eichorn, W. H. Freeman and Company, ISBN 1-57259-041-61999

Meeting times: Lectures: Tues./Thurs., 10:25-11:40, N-218.
Laboratories TBA

Class format: Lectures will be integrated with examination of demonstration materials. An optional field trip will be held late in the semester, tentatively Saturday, May 4.

Why a course in botanical diversity? I believe that it is important for all biologists (actually, all humans, but especially biologists) to appreciate the diversity of life that has evolved on Earth. Biodiversity is an invaluable resource, providing food, shelter, medicine, environmental detoxification, fuel, labor, genes, oxygen, and clothing. Biodiversity has also served humanity as a source of spiritual and aesthetic inspiration. Regrettably, we are swiftly and irrevocably destroying biodiversity. Purely practical concerns dictate that we should make every effort to document, understand, and protect the diversity of life on Earth. Many of the organisms treated in this course are microscopic or otherwise obscure and are therefore poorly understood. Nevertheless, they play pivotal ecological roles and have figured prominently in the evolution of the biosphere. After taking this course, you will possess knowledge about a large and important fraction of biodiversity, about which even most biologists know very little.

Grading:

hour exams	4 x 100 points	400
oral quizzes	4 x 50 points	200
Final exam	100 points	100
total		700

Hour exams will include written questions in mini-essay format (a short paragraph should be sufficient to answer each question) and practical questions based on specimens. Hour exams are not cumulative and will be given during the regular class period (i.e., there will be no lecture on the days of the exams).

Oral quizzes will cover the same material as the hour exams. I will prepare several questions that will provide a framework for the quiz. However, the oral quiz can take any direction, and at best will become a conversation regarding the subject matter of the course. We will make twenty-minute appointments for the oral quizzes, which will take place outside of the regular class time.

Why oral quizzes? There are several reasons why I decided to include oral quizzes in this course: 1) I believe that this will be a very effective way to determine your level of comprehension of the material; 2) some people have a hard time expressing their ideas in writing—the oral quizzes will give those people a chance to demonstrate how well they understand the material; 3) I believe that it is very important for scientists to develop strong communication skills, including the ability to participate in a scientific discussion; 4) Oral exams are a standard practice in graduate programs—the oral quizzes will give you experience with this kind of examination.

Final exam will be cumulative and will include only written questions.

Tentative lecture schedule (subject to change):

Date	Subject	Readings*	Exams/Quizzes
Jan 15 T	Course policies, organization, and philosophy—why "Botanical Diversity"?	Ch. 1	
17 R	Overview of the history of life from a botanical perspective/Phylogenetics 1	Ch. 13	
22 T	Phylogenetics 2; Rooting the tree of life/The major domains of life	Ch. 13	
24 R	Prokaryote diversity—Mechanisms of photosynthesis	Ch. 7, p. 133-139; Ch. 13, p. 270-271; Ch.14, p. 282-296	
29 T	Morphology and ecology of photosynthetic eubacteria	Ch. 14, p. 287-292 Ch. 16, p. 348-350 Ch. 30, p. 741	
31 R	(Multiple) Origins of chloroplasts	Ch. 13, p. 272-279 Ch. 14, p. 287-292 Ch. 16, p. 356-357	Quiz 1
Feb. 5 T	---	---	Exam 1
7 R	Glaucophytes, Cryptophytes, Chlorachniophytes, and Rhodophytes (and ancestral state reconstruction with parsimony)	Ch. 16, p. 356-361	
12 T	Rhodophytes 2, Dinoflagellates 1	Ch. 16, p. 349-352, 357-362, 361-366	
14 R	Dinoflagellates 2, Euglenoids, Stramenopiles 1	Ch. 16, p. 349-352, 361-366, Ch. 17 p. 370-383	
19 T	Stramenopiles 2	Ch. 17, p. 370-383	
21 R	Stramenopiles 3, Haptophytes, Fungi 1	Ch. 16, p. 366-367, Ch. 17, p. 370-383, Ch. 15, p. 306-344	
26 T	Fungi 2	Ch. 15, p. 306-344	Quiz 2
28 R	---	---	Exam 2
Mar. 4-8	Spring break	---	
12 T	Fungi 3	Ch. 15, p. 306-344	
14 R	Fungi 4, Mycetozoa	Ch. 15, p. 306-344, Ch. 16, p. 352-356	
19 T	Chlorophytes 1: Green "algae"	Ch. 17	
21 R	Chlorophytes 2: Green algae/bryophytes	Ch. 17-18	
26 T	Chlorophytes 3: bryophytes/seedless vasc.plants 1	Ch. 18-19	
28 R	Chlorophytes 4: seedless vasc.plants 2	Ch. 19	Quiz 3
Apr. 2 T	---	---	Exam 3
4 R	Chlorophytes 5: seedless vasc.plants 3	Ch. 19	
9 T	Chlorophytes 6: introduction to seed plants	Ch. 20, 21	
11 R	Chlorophytes 7: diversity of gymnosperm groups	Ch. 20	
16 T	Chlorophytes 8: angiosperms 1 vegetative and floral anatomy	Ch. 21, 24	
18 R	Chlorophytes 9: angiosperms 2 overview of angiosperm diversity—paleoherbs and basal angiosperms	Ch. 21	
23 T	Chlorophytes 10: angiosperms 3 Monocots/Eudicots	Ch. 22, 23	Quiz 4
25 R	---	---	Exam 4

*specific page ranges and supplemental readings will be assigned throughout the semester.